REMARKS

By the present Amendment, Claim 49 has been amended to recite that the present invention also includes a power junction means for delivering a constant voltage DC to one or more DC compatible loads, at an output of said power sharing system, and that the power controller biases the power junction means for drawing power from the secondary source of DC power, to limit peak power supplied from the primary source of AC power, to one or more DC compatible loads, in accordance with a pre-set threshold of power from the primary source of AC power, in order to reduce peak power surcharges.

Applicant also adds new Claim 116 drawn to a power control system for use in lighting, in accordance with the present invention.

With respect to the prior art, Claims 49-54 and 56 were rejected as being unpatentable over Plahn et al in view of Young and Godard et al and Papathomas et al.

However, Plahn discloses an integrated power system in which an engine/generator power supply is integrated with storage batteries to provide AC power. During low power operation the engine/generator charges the battery, and when demand goes up, power from the battery is employed. Plahn only serves AC loads, while the present invention serves DC loads and appliances. Plahn's 3 phase generator is analogous to a motor vehicle alternator, in that it produces DC power through retification and doesn't directly service DC loads like the present invention. Plahn only uses AC power to operate a battery charger, which in turn, with additional circuitry, makes 170 V DC voltage, to operate the inverter, in service to conventional AC loads. Plahn merely wants

to avoid contentious running of the generator for small electrical loads, which are inherently noisy and wasteful. Moreover, Plahn does not expressly couple DC current to end-use DC loads for optimal energy transport, using DC voltage for control. In contrast, the present invention uses an alternative power source(variable output), which is placed across the end-use load, for low loss, almost lossless, coupling of energy to the load. In contrast, Plahn has to go through lossy conversion stages while making AC power from the DC power, and DC power from the AC power. In contrast to Plahn, the present invention uses voltage control from a reference power source, to achieve power steering from an alternative power source, as well as to and from a storage battery, without intervening conversion stages, none of which is suggested by Plahn. Plahn is merely a way to avoid continuous engine and alternator operations under low electrical load conditions. Furthermore, Plahn does not specify any means for coupling alternative energy sources, nor is it obvious that Plahn suggests coupling energy sources, when taken in combination with the cited art of Young, Godard or Papathomas.

Young has a secondary electrical power supply in which a battery is employed to meet surge or peak demands.

Godard shows the use of photocells to power a load and charge a battery. Excess power generation is fed back to the grid.

Papathomas discloses a DC power plant with AC input and a bank of rectifiers being controlled to provide more efficient use of the AC power and was cited for the backup battery.

According to the Examiner, it would have been obvious to combine the teachings of these references "for the purpose of ensuring proper sharing of DC loads so that the primary source will not have to supply the peak". This conclusion is considered to be a stretch, since the references appear to be concerned primarily with providing backup power in the event of a failure in the supply of main power. Young does have a battery, which charges during normal operation, and discharges to provide additional power on the occasion of a surge or peak demand. But Young is dealing with a problem created when a vehicle incurs a surge in demand when the vehicle starts its motion from rest, during which time the system's voltage drops dramatically (see col. 1, last few lines), in other words when the system voltage is incapable or at least less capable, of meeting the momentary demand. This problem of Plahn is different from the problem being dealt with in the present invention.

For example, in the present situation, one purpose of the invention is also to avoid surcharges in drawing peak power from an AC power source. So the teachings of this patent are really irrelevant to the claimed invention.

In the present invention there is also called for, in independent claim 49, primary sources of AC and DC, a secondary source of DC, and a control system which relies on power from the secondary source of DC to "limit peak power from" the primary source of AC power. As is understood in the art, it is known that use of peak power from an AC source of power quite often results in surcharges. In order to avoid these surcharges, in the present invention this is avoided by the use of the control system to draw power from

the secondary source of DC power when peak power is required. It is believed that, even if the references were combined as suggested by the Examiner, this combination would still not be suggested.

However, in order to clarify the distinction in the claims, claim 49 has been amended to recite that the power controller uses power drawn from the secondary source of DC power to limit peak power supplied from the primary source of AC power "in accordance with a pre-set threshold of power from said primary source of AC power in order to reduce peak power surcharges". This language, and language related to the power junction means, is taken from page 7 of the specification and the features do not appear to be taught or suggested in any of the art of record.

The remaining claims all depend from independent claim 49.

With regard to Plahn as a suitable reference, it is pointed out that this patent has an effective filing date of Jan. 26, 1994. The present application is, effectively, a continuation in part of application S.N. 07/638,637 which has a filing date of Jan. 18, 1991, clearly antedating the effective filing date of Plahn. See the first paragraph of the present application for a more detailed description of the parentage of this application. As resolved in the prior Amendment of February 12, 2001, which amended the specification at page 4, line 25, to add the subject matter of originally filed Claims 9-21 to the specification under MPEP 608.01(1), support presently exists for the subject matter of Figure 10 of the present application, which includes common subject matter in application serial number 07/638,637 of January 18, 1991.

The original subject matter that is present in US Patent No. 5,500,561 of the Applicant Wilhelm herein is implicitly also described in Figure 10 of the present invention, as amended by the insertions to the specification in the Amendment of February 12, 2001, at page 4, line 25 of the specification, and with the expanded discussion of Figure 10. In other words, the subject matter of amended Claim 49 herein, with the addition of the "power junction means", is present in Figures 2 and 3 of Wilhelm '561, as well as in the related specification.

For example, the power junction means added herein to Claim 49 is present in both Figure 10 of the present application, as well as in an analogous situation in Figures 2 and 3 of the parent application of January 18, 1991, as noted at diode network 50,52 and 54 of Figure 3 therein and as reference numeral 55 of Figure 10 of the present application. A relevant discussion is noted at column 10, lines 55 to 65, and column 7, line 63 continuing to column 8, line 59, as well as at column 12, line 66 through column 13, line 4 therein of the parent patent no. 5,500,561 filed originally on January 18, 1991 as serial number 07/638,637.

In connection therewith, the present invention uses a controlled voltage regulation to support the ideal voltage state of a fully charged rechargeable battery, that is in parallel with, and after the voltage regulator, in a mode for the longest battery stand-by life. Therefore the present invention intrinsically provides for charging the battery by controlling its charging voltage to ideally track the battery state of charge voltage, until a float potential is reached in the battery.

For example, the voltage regulator of the present invention is used to keep the battery charged and, by varying the voltage, to effect power sharing among the various DC sources with the AC input. In addition, in the present invention, each controller has its own rechargeable DC power source.

Therefore, it is believed that the subject matter in claim 49 has support in the disclosure of the '637 application. For this reason, although it is believed that Plahn is distinguishable substantively, it is requested that Plahn should not be considered as a reference, for the aforesaid reasons.

In view of the foregoing, it is believed that the claims in their present form are drawn to patentable subject matter and should be allowed.

The Examiner is requested to call the undersigned in the event that changes are required to obtain allowance of the application.

A favorable action is solicited.

Respectfully submitted,

ALFRED M. WALKER
Attorney for Applicant
Reg. No. 29,983
225 Old Country Road
Melville, NY 11747-2712
Tel 516-361-8737

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In the Claims

Marked up version showing changes:

49. (four times amended) A power sharing system comprising:

a primary source of AC;

an alternative primary source of DC;

a secondary source of DC;

a power controller capable of inputting power simultaneously from said primary sources, said alternative primary source of DC making a shared contribution of power selected by said power controller, and having a power junction means for delivering a constant voltage DC to at least one DC compatible load at an output of said power sharing system;

said power controller having a converter converting inputted electrical power into a defined DC-regulated voltage to provide and manage power to said DC compatible load;

said secondary source of DC being a battery to supply power in the event of a failure in a primary source of power, said power controller maintaining said battery in a fully charged condition; and,

said power controller [capable of using said primary source of DC power] biasing said power junction means for drawing power from said secondary source of DC power to limit peak power supplied from said primary source of AC power to said at least one

DC compatible load in accordance with a pre-set threshold of power from said primary source of AC power in order to reduce peak power surcharges.

50. (twice amended) The power system of Claim 49 wherein said DC compatible load is a lighting system.

51. (twice amended) The power system of Claim 49 wherein said alternative primary source of DC is a storage medium.

52. (twice amended) The power system of Claim 49 wherein said alternative primary source of DC is photo voltaic.

53. (twice amended) The power system of Claim 49 wherein said alternative primary source of DC is a cogenerator.

54. (twice amended) The power system of Claim 49 wherein said alternative primary source of DC is a wind energy conversion system.

56. (twice amended) The power system as in Claim 49 in which said power controller has circuitry for combining power from said alternative primary source of DC and said battery in the absence of power from said primary source of AC.

116. (new) A power control for use in a high efficiency lighting system for maintaining normal lighting conditions by lighting fixtures requiring DC electrical power comprising;

an AC connection for receiving AC electrical power from a grid source and an output connection for delivering required DC electrical power to said lighting fixtures;

a converter converting said AC electrical power to DC electrical power;

a connection for a battery for providing on a standby basis said required DC voltage electrical power to said power control means;

said battery connection being connected to said converter for maintaining a connected battery in a fully charged condition when AC power is connected to the AC connection during normal supply of AC electrical power from said grid source; and

said power control delivering said required DC electrical power from said battery means to said lighting fixtures during an AC electrical power outage to maintain without interruption normal lighting by said lighting fixtures.